

UNIT III : CELL: STRUCTURE AND FUNCTIONS

6. BIOMOLECULES

1 OMQ + 1 VSAQ [1M + 2M = 3 Marks]

ROOT POINTS

1. **Biomolecules** are the molecules or chemicals present in the living organisms.
2. Main contents of this chapter: i) Proteins ii) Polysaccharides iii) Nucleic acids iv) Enzymes
3. Chemical analysis of living organisms can be done by the Trichloro acetic acid [MCQ]
4. **Inorganic biomolecules:** Minerals, Gases and Water.
5. **Organic biomolecules:** Carbohydrates, Lipids, Amino acids, Proteins, Enzymes, Nucleotides, Nucleic acids, Vitamins etc.,
6. **Fats and oils are glycerides** in which fatty acids are esterified to glycerol.
7. **Primary metabolites:** Fats, Oils, Nucleotides, Amino acids, Sugars etc.,
8. **Secondary metabolites:** Alkaloids, Flavonoides, Rubber, Essential oils, Antibiotics, Coloured pigments, Scents, Gums, Spices etc.,
9. **Concanavalin A** is **Lectins**. [MCQ]
10. **Rubber** is the secondary metabolite. [MCQ]
11. The R-group of the serine is **CH₂OH** . [FIB]
12. The most **abundant** biomolecule in living organisms is **water**.
13. **Biomacro molecules** are polymers made of building blocks.
14. The molecular weight of macromolecules is greater than **1000** Daltons. [FIB]
15. **Organic compounds in living organisms:** Aminoacids, monosaccharides, nitrogen bases.
16. There are **21** types of **amino acids** and 5 types of nucleotides.
17. **Macro molecules in living system:** Proteins, Nucleic acids and Polysaccharides.
18. **Proteins** are heteropolymers made of **amino acids**.
19. Proteins serve a variety of **cellular functions**.
20. **Many proteins are enzymes**, some are antibodies, some are receptors, some are hormones.
21. **GLUT-4** protein enables glucose uptake into cells. [MCQ]
22. **Tertiary structure** is necessary for the many biological activities of proteins. [MCQ]
23. **Collagen** is the most abundant protein in **animal world**. [OWQ]
24. **RUBISCO** is the most abundant protein in the whole of the biosphere. [FIB]
25. **Polysaccharides** are components of cell wall in plants, fungi.
26. Polysaccharides are also storage forms of energy. **Ex:** Starch, Glycogen.
27. **Inulin** is the polysaccharide which is a polymer of fructose. [MCQ]
28. **Nucleic acids** (DNA and RNA) are composed of nucleotides, serve as **genetic material**.
29. The pentose sugar in DNA is **Deoxyribose sugar** [FIB]
30. The pyrimidine which is absent in the RNA is **Thymine** [OWQ]

31. Cytidylic acid is a **Nucleotide**. [MCQ]
32. • **Apoenzyme**: The protein part of the enzyme is called apoenzyme; [VSAQ]
 • **Cofactor**: Non-protein part of a holoenzyme is cofactor.
33. The non-protein constituent of the enzyme is **Cofactor**. [OWQ]
34. In the presence of carbonic anhydrase **6 lakhs** H_2CO_2 molecules can be formed per Sec. [OWQ]
35. Coenzyme NAD and NADP contain **Niacin** vitamin [FIB]
36. The acid which is formed in our skeletal muscle, under anaerobic conditions is **Lactic acid**. [OWQ]
37. **Tyrosine** is the aromatic amino acid. [MCQ]
38. Palmitic acid contains **16 carbons**. [MCQ]
39. Exoskeleton of arthropods is made up of **Chitin** [FIB]
40. **Zinc(Zn)** is the metal ion cofactor for the proteolytic enzyme carboxypeptidase. [NEET-2024][OWQ]
41. **Amino acids** Ex: Glycine **Sugars** Ex: Glucose [VSAQ]
Nucleotide Ex: Adenylic acid **Fatty acids** Ex: Lecithin, Glycerol
42. **Cotton fibre** - Cellulose **Exo skeleton of cockroach** - Chitin [VSAQ]
Liver - Glycogen **Peeled potato** - Starch.
43. Macromolecule chitin is **nitrogen containing polysaccharide**. [NEET-2013]
44. The essential chemical components of many coenzymes are **vitamins**. [NEET-2013]
45. **Collagen** is the most abundant protein in the animal World. [2012 PMT]
46. A non-proteinaceous enzyme is **ribozyme**. [NEET-2016]
47. A typical fat molecule is made up of **1 glycerol and 3 fatty acid molecules**. [NEET-2016]
48. **Sucrose** is a non-reducing carbohydrate. [NEET-2014]
49. **Lipids** are non-polymeric. [NEET-2017]
50. DNA replication out of a mixture of biomolecules can be treated with chilled ethanol. [NEET-2019]
51. The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by **Alfred Sturtevant**. [NEET-2019]
52. Purine found in both DNA and RNA are **Adenine and Guanine**. [NEET-2019]
53. The most abundant protein in the animals is **Collagen**. [NEET-2020]
54. Formula for Maltose is **$\text{C}_{12}\text{H}_{22}\text{O}_{11}$** . [NEET-2022]
55. Lactose present in the growth medium of bacteria is transported to the cell by the action of **permease**. [NEET-2024]
56. **Catalase** enzyme contains 'Haem' as the prosthetic group. [NEET-2025]
57. $\text{S-G+S}^{\#} \rightarrow \text{S+S}^{\#}\text{-G}$. This reaction can be catalysed by **transferase** class of enzyme. [NEET-2025]